National Park Service Inventory and Monitoring Program
South Florida / Caribbean Network

Vital Signs

The NPS South Florida / Caribbean Network will be meeting with potential partners and holding workshops to determine monitoring strategies for 41 Vital Signs.

What are Vital Signs?
"Vital Signs" are physical, chemical, and biological elements and processes of park ecosystems that represent the overall health or condition of the park; they may also be park resources that are highly valued but not necessarily indicative of general park health.

What is the NPS Inventory & Monitoring Program? The South Florida / Caribbean Network (SFCN) is one of 32 NPS Inventory and Monitoring Program networks and has the responsibility for selecting "Vital Signs", and developing monitoring programs or coordinating with existing monitoring programs to effectively report the status, changes, and early warning of trends in these vital signs, for the purpose of assisting adaptive management of park resources.

Vital signs will be reported to park management staff, U.S. Congress, area scientists, and the public.

The South Florida / Caribbean Network includes:
- Big Cypress National Preserve (BICY)
- Biscayne National Park (BISC)
- Buck Island Reef National Monument (BUIS)
- Dry Tortugas National Park (DRTO)
- Everglades National Park (EVER)
- Salt River Bay National Historic Park and Ecological Preserve (SARI)
- Virgin Islands National Park (VIIS)

How were vital signs identified and prioritized?
The SFCN held three Vital Signs Indicator Development Workshops in Jan.-Mar. 2006 with a total of 70 participants who reviewed network conceptual models, developed potential indicators and filled out indicator worksheets. The worksheets were uploaded into an online database where they were ranked by 102 people. Participants included area scientists, agency staff, NPS staff, and non-NPS natural resource managers. The prioritized list of indicators was presented to park superintendents and resource managers in May, 2006. The 62 indicators were then consolidated into 41 general "Vital Signs" (see Table 1).

How will SFCN design its monitoring program?
The SFCN is looking for:
- Opportunities to collaborate (e.g. CERP, park monitoring, NOAA, CWCS)
- Opportunities where co-location or other techniques can reduce costs
- Suites of indicators that when monitored together synergistically add value by describing system condition more completely, even though some individually may have ranked lower

This is expected to involve meetings/workshops with local experts on the selected vital signs. Funding constraints will allow SFCN to monitor only some of the 41 Vital Signs.

By December 2007, NPS-SFCN staff will produce a "*Vital Signs Monitoring Plan*" that includes its overall monitoring strategy, sampling design, protocols selected and/or planned development, databases, staffing, budget, analysis and reporting for the Vital Signs to be monitored.

Where can I get more information?
(305) 252-0347, Matt_Patterson@nps.gov
http://www1.nature.nps.gov/im/units/sfcn/
http://www1.nature.nps.gov/im/units/sfcn/vsmp.htm

Table 1. SFCN Vital Signs linked with workshop indicators. SFCN Vital Signs are shown within the National Framework (Level 1, 2, and 3) and linked with the indicators identified in workshops in January - March 2006 and ranked via an online ranking process. The workshop indicators were lumped into more general "Vital Signs" which are more consistent in organization and level of detail with other NPS Inventory and Monitoring Program Network Vital Signs. However, the workshop indicator details will help guide the program. The priority rank for each indicator is also given (1 is highest).

National I & M Program Framework			SFCN Vital Sign	SFCN Workshop Indicators	Priority rank
Level 1	**Level 2**	**Level 3**			
Geology and Soils	Geomorph-ology	Coastal/ Oceanographic Features and Processes	Coastal Geomorphology	Sediment elevation in mangroves and mud banks (Fl Bay) Salt Ponds (USVI) and Mangroves fringes	34
				Position and Spatial Extent of Mud Banks, Buttonwood Embankment and Berms	46
		Stream/River Channel Characteristics	Wetland substrate	Spatial and temporal changes in extent and distribution of substrate type (marl vs. peat).	51
				Long-term sediment elevation changes in cypress strands and domes	58
Water	Hydrology	Surface Water Dynamics	Surface Water Hydrology	Hydrology = water stage, flow, timing, and duration.	3
				Freshwater Inputs to Estuaries	7
	Water Quality	Water Chemistry	Estuarine salinity patterns	Spatial and Temporal Salinity Patterns	11
		Nutrient Dynamics	Nutrient Dynamics	Surface Water Quality- physiochemical surface water characteristics at specific locations	12
				Water Quality- Nutrients characteristics of the marine water bodies	5
				Nutrient Loading and Sediment Loading	18
		Toxics	Contaminants	Contaminants in water column, organisms, and sediments.	25
		Aquatic Macroinvertebrate	Periphyton (Freshwater)	Periphyton	23
			Phytoplankton (Marine)	Phytoplankton composition and biomass	50
Biological Integrity	Invasive Species	Invasive/Exotic Plants	Invasive/Exotic Plants	Invasive exotic plants	6
		Invasive/Exotic Animals	Invasive/Exotic Animals	Invasive exotic fauna	17
				Early detection, status, and trends of non-indigenous aquatic species.	20
	Focal Species or Communities	Marine Communities	Marine Benthic Communities	Coral Communities	1
				Seagrass and other SAV cover and community composition	4
		Intertidal Communities	Mangrove-Marsh Ecotone	Location of critical ecotones - field plots/transects	22
				Ecotone shifts along wetland boundaries - Mangrove to marsh to cypress- Aerial photography	33
				Physical drivers of mangrove-marsh ecotone	36
		Wetland Communities	Wetland Ecotones and Community Structure	Location of critical ecotones - field plots/transects	22
				Long-term, within-community vegetation shifts using permanent plots	26
		Forest/Woodland Communities	Forest Ecotones and Community Structure	Location of critical ecotones - field plots/transects	22
				Long-term, within-community vegetation shifts using permanent plots	26
		Marine Invertebrates	Marine Exploited Invertebrates	Exploited Inverts (Lobster, Conch, Crabs, Shrimp, Stone Crab, Blue Crab, Clams, Oysters, Sponges, Whelks)	13
				Pink Shrimp population structure, status, and trends	40
				Oyster population structure, status, and trends	47
			Marine Infaunal Community	Infaunal benthic community structure and abundance for animals	53
		Freshwater Invertebrates	Aquatic invertebrates in wet prairies & marshes	Aquatic invertebrates in wet prairies and marshes	41
		Terrestrial Invertebrates	Butterflies	Butterflies	61
			Island Insects	Island Insects	62

Table1 (Continued). SFCN Vital Signs linked with workshop indicators.

National I & M Program Framework			SFCN Vital Sign	SFCN Workshop Indicators	Priority rank
Level 1	**Level 2**	**Level 3**			
Biological Integrity (Continued)	Focal Species or Communities (Continued)	Fishes (marine)	Marine Fish Communities	Exploited Fish Assemblage - Grouper, Snapper, (parrotfish, surgeonfish in USVI)- population structure, status, and trends	2
				Marine Fish Communities - Coastal Shelf / Deep oceanic - Status, structure, trends	15
				Marine Fish Communities - Bays/Mangroves - Status, structure, trends	21
			Focal Sportfish communities	Goliath Grouper (Red Hind in VI) - population structure, status, and trends	38
				Bonnethead, Lemon, Bull, Nurse Sharks - population structure, status, trends	43
				Gray Snapper (Schoolmaster in VI)- population structure, status, & trends	45
				Spotted Sea Trout - population structure, status, and trends	48
				Snook - population structure, status, and trends	52
		Fishes (freshwater)	Freshwater fish and large macro-invertebrates	Freshwater fish and large macro-invertebrates in wet prairies and marshes	24
		Amphibians and Reptiles	American Alligator	American alligator (Alligator mississippiensis)	29
			Amphibians	Amphibians - South Florida & USVI	32
				Pig Frog (Rana grylio)	54
			Reptiles-USVI	Reptiles - USVI	57
			Florida Box Turtle	Florida Box Turtle (Terrapene Carolina bauri)	59
		Birds	Colonial Nesting Birds	Wading birds - Regional South Florida - Systematic Reconnaissance Flights	10
				Colonial Nesting Birds (e.g. Least terns, pelicans, boobies, roseatte terns, egrets, storks, herons)	16
			Landbirds	Land Birds - residential and migratory	31
				Land birds - Mangrove - population abundance and distribution	42
				Landbirds - Pine Rockland - population abundance and distribution.	49
				Landbirds-Cavity-nesting pine rockland birds - Demographics (Fecundity and Survival)	55
		Mammals	Bats-USVI	Bats - USVI	60
	At-risk Biota	T&E Species and Communities	Marine Invertebrates-RTE	Marine Invertebrates - Rare, threatened, and endangered species - Acropora, Diadema, Antipathes	8
			Sea Turtles	Sea Turtles	27
			American crocodile	American crocodile (Crocodylus acutus)	28
			Protected Marine mammals	Marine Vertebrates - Rare, threatened, and endangered species - Crocodiles, Dolphin, Manatee, Sea Turtles, Protected marine mammals.	35
			Imperiled & Rare Plants	Critically Imperiled and Rare Plants	39
			Florida panther	Florida panther	44
			Sawfish	Sawfish- population structure, status, and trends	56
Human use	Visitor and Recreation Use	Visitor Use	Visitor Use	Visitor Use (Both commercial and individual/personal use)	19
Landscapes (Ecosystem Pattern and Processes)	Fire and Fuel Dynamics	Fire and Fuel Dynamics	Fire Return Interval Departure	Fire Return Interval Departure	37
	Landscape Dynamics	Land Cover and Use	Vegetation Communities Extent & Distribution	Shape, orientation, location, and coverage of vegetation community types	9
			Benthic Communities Extent & Distribution	Benthic community spatial & temporal changes in extent and distribution -remote sensing	30
			Land Use Change	Land Development inside/outside the park (within 5 mile radius for USVI parks, radius may be expanded to 75 miles in South Florida)	14